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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,515	01/26/2004	James A. Smith	KLAIP095/P1072	1036

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EXAMINER


SHECHTMAN, SEAN P

ART UNIT PAPER NUMBER

2125

DATE MAILED: 11/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/765,515	Applicant(s) SMITH ET AL. 	
	Examiner Sean P. Shechtman	Art Unit 2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-15 and 17-19 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-15 and 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-4, 6-15, and 17-19 are presented for examination.

Drawings

2. Objections withdrawn due to the amendment.

Specification

3. Objections withdrawn due to the amendment.

Claim Objections

4. Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 1, as amended, contains all the limitations that claim 10, as amended, contains, namely, "a composite-row based analysis that involves...comparing each of the first composite images in order to obtain defect information".

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-4, 6-15, and 17-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably

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convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims, as amended, require processing to include a composite-row based analysis, wherein said analysis involves a plurality of first composite images being made up of data frames collected by one detector. The examiner respectfully submits that the statement that composite-row based analysis requires data collected from only one detector is flawed and not in unison with applicant's original disclosure. The claim appears to require data collected from only one detector for the composite-row based analysis while the instant specification clearly teaches that the "composite-row" analysis requires a composite image for each sensor (See page 19 and figure 10 of the instant specification). Clearly, the metes and bounds of this claim cannot be determined because applicant has claimed composite-row analysis without the step that defines said analysis as composite-row analysis. The examiner respectfully notes page 19, line 7, wherein applicant teaches the technique of composite-row based analysis as "A composite image 812 is generated for each of sensors, n. Then, each of the combined images 812 for each sensor are compared against each other". The examiner respectfully believes that the claims cannot be interpreted in unison with this description and figure 10 while the claims require only one detector for the analysis.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

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6. Claims 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The examiner respectfully submits that it is not clear which claim claim 17 depends from.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1-4, 6-15, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,991,699 to Kulkarni in view of U.S. Pat. No. 6,701,259 to Dor.

Referring to claims 1, 10, and 13, Kulkarni teaches a computer-implemented method and system for detecting features on a semiconductor wafer (Title; Abstract) comprising:

a wafer having a plurality of device areas (Col. 5, lines 52-57);

collecting data with a plurality of detectors that are positioned about the semiconductor wafer, wherein each detector collects a data frame for each of a plurality of device areas (Col. 5, lines 52-57; Col. 6, lines 17-19);

transmitting the data frames from each detector to a data distribution node (Col. 5, lines 38-45), which is part of a set of data distribution nodes (Fig. 1, element 106; Fig. 11, element 298);

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a plurality of data transfer paths connecting each of the distribution nodes, wherein each data transfer path transfers data frames collected by a respective detector (Col. 5, lines 24-29);

a processing node configured to receive data frames from the data distribution system, the processing node configured to analyze the data frames, wherein the data transfer paths allow data frames collected by a detector to be routed to a processing node (Col. 5, lines 24-50; Fig. 1 and 11; Col. 8, lines 3-19);

wherein the processing of data frames includes a composite-row based analysis that involves, generating a plurality of first composite images (Col. 6, lines 17-19; Col. 25, lines 10-30; Col. 26, lines 4-67; Col. 27, lines 1-12), each of the first composite images being made up of each of the data frames collected by one of the detectors (Col. 5, lines 16-57), wherein each data frame corresponds to a respective device area (Col. 6, lines 15-17; Col. 25, lines 10-30; Col. 26, lines 4-67; Col. 27, lines 1-12); and comparing each of the first composite images in order to obtain defect information (Col. 6, lines 8-26; Col. 25, lines 10-30; Col. 26, lines 4-67; Col. 27, lines 1-12).

Kulkarni teaches multiple inspection stations with machine vision detectors (Col. 5, lines 17-52), wherein within a inspection station a pattern made up of pixels (Col. 5, lines 52-57; Col. 6, lines 17-19) is compared with an adjacent pattern (Col. 6, lines 17-19). Kulkarni goes on to teach an analysis station, that can be part of or separate from the inspection station (Col. 5, lines 17-37) wherein defect data is transmitted through a network from inspection station to review station to analysis station, wherein the analysis clearly involves composite-row based analysis including subdividing a region of

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interest on a wafer and searching row by row for defects and combining defects in one row with defects searched and identified as associated (i.e., identified as the same, and therefore compared) defects in another row (Col. 25, lines 10-30; Col. 26, lines 4-67; Col. 27, lines 1-12). Kulkarni teaches a data distribution system with plural data distribution nodes in the network bus of figure 1, element 106 and the data bus of figure 11, element 298, wherein Kulkarni clearly teaches that the network bus receives data frames collected by the inspection stations (Col. 5, lines 38-45).

Referring to claims 1, 2, and 13, Kulkarni teaches an analysis station to interface with multiple inspection stations at different locations throughout the fabrication area (Col. 5, lines 24-29). The examiner respectfully submits that multiple inspection stations transmitting machine vision detection information through the network to the review station and then to analysis station is plural data transfer paths connecting each of the network node 106 and data bus 298 (i.e., one path for data from every inspection station).

Referring to claims 4, 6, 8, 9, 15, 17, and 19, Kulkarni teaches a computer-implemented method and system above wherein the processing of data further comprises a composite-column based analysis that involves, generating a second composite image for each device area by combining the data frames collected by each detector corresponding to a specific device area; and comparing each of the second composite images in order to obtain defect information (Col. 6, lines 8-26; Col. 25, lines 10-30; Col. 26, lines 4-67; Col. 27, lines 1-12).

Referring to claims 7 and 18, Kulkarni teaches a computer-implemented method and system above wherein the processing of data further comprises a row based analysis involving, for each detector, comparing the data frames collected for each of the plurality of device areas, wherein there are four or more device areas (Fig. 5 and 6; Col. 6, lines 8-26; Col. 25, lines 10-30; Col. 26, lines 4-67; Col. 27, lines 1-12).

The examiner respectfully submits that the claims, as such, do not require that the data frames used in the composite-row based analysis be the same data frames as the first and second data frames transferred along respective first and second paths that connect a first and second distribution node. In fact, the claims, as such, do not even require that the first and second distribution nodes be within the set of distribution nodes or distribution system. Furthermore, the claims, as such, do not require that the first and second distribution nodes be a distribution node that receives data frames from any detectors. The claims, as such, do not place any limitation on what the defect information is required to be, nor do the claims require that the comparison detect defects. The claims, as such, do not require that the data transfer paths be different data transfer paths, nor do the claims require that the data transfer paths not cross or intersect. Furthermore, the claims, as such, do not require a location where the data frames of the data transfer paths are transferred to or from, only that the paths connect the distribution nodes. Further still, the claims, as such, do not require parallel processing.

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Referring to claims 1 and 13, Kulkarni teaches all the limitations disclosed above, however, Kulkarni fails to teach plural processing nodes. The examiner respectfully submits that duplicating a part for a multiple effect is a clearly a modification considered to be well within the level of ordinary skill in the art - *In re Harza*, 274 F.2d 669,671,124 USPQ 378, 380 (CCPA 1960). Referring to claims 3 and 14, Kulkarni fails to teach buffering data frames within data distributor buffers within each data distribution node.

However, referring to claims 1 and 13, Dor teaches analogous art, wherein a computer-implemented method and system for detecting features on a semiconductor wafer (Title; Abstract) comprises:

a wafer having a plurality of device areas (Fig. 7, element 713; Col. 15, lines 18-21); collecting data with a plurality of detectors that are positioned about the semiconductor wafer (Col. 1, lines 26-36; Col. 2, lines 60-66; Col. 3, lines 21-31; Col. 4, lines 64-66), wherein each detector collects a data frame for each of a plurality of device areas (Fig. 7, element 713; Col. 15, lines 18-21); transmitting the data frames from each detector to a data distribution node (Col. 3, lines 14-15), which is part of a set of data distribution nodes (Fig. 1, 104, 104, 104); a plurality of data transfer paths connecting each of the distribution nodes (See network of Fig. 1), wherein each data transfer path transfers data frames collected by a respective detector (See paths in Fig. 1); routing the data frames from the data distribution nodes to processing nodes (Col. 3, lines 15-16); a plurality of processing nodes configured to receive data frames from the data distribution system (Col. 3, lines 15-16; Col. 3, lines 42-52; Col. 3, line 63 - Col. 4, line

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6), the processing nodes configured to analyze the data frames (Col. 3, lines 42-52; Col. 3, line 63 - Col. 4, line 6), wherein the data transfer paths allow data frames collected by a detector to be routed to a processing node (Fig. 1, element 110; Col. 3, lines 42-52; Col. 3, line 63 - Col. 4, line 6).

Referring to claims 3 and 14, Dor teaches a computer-implemented method and system above further comprising: buffering data frames within data distributor buffers within each data distribution node (Fig. 1, element 162a).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the plural processing nodes and data distributor buffers of Dor with the teachings of Kulkarni.

One of ordinary skill in the art would have been motivated to combine Dor with Kulkarni because Dor teaches a system that can effectively analyze wafer defects and repeatedly utilize the defect source information through the use of a shared database of defect data that is accessible over a wide area network. Furthermore, the examiner respectfully submits that duplicating a part for a multiple effect is a clearly a modification considered to be well within the level of ordinary skill in the art - *In re Harza*, 274 F.2d 669, 671, 124 USPQ 378, 380 (CCPA 1960).

Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

8. Applicant is advised that should claims 6, 7, and 8 be found allowable, claims 9, 11, and 12, respectively will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Response to Arguments

9. Applicant's arguments with respect to claims 1-4, 6-15, and 17-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571) 272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

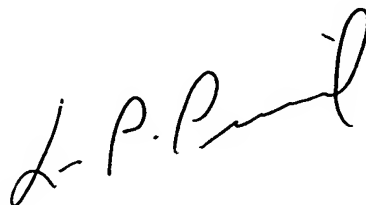
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SPS

Sean P. Shechtman

November 5, 2004



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